

THE FOOD OF ADULT OSMYLIDAE: KEMPYNINAE (NEUROPTERA)

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Abstract

Examination of gut contents of Kempyninae showed that they take a wide range of foods, sometimes with a preponderance of plant material. This includes pollen, fungal hyphae and spores, and fragments of foliage and bark.

Adult Osmylidae have generally been assumed to be predators, in common with those of other groups of Neuroptera for which little biological information is available. Direct evidence for this habit is sparse, and is almost wholly limited to fragmentary observations on the single European species [*Osmylus fulvicephalus* (Scopoli)], which has been observed to take insect food (Ussing, 1915; Killington, 1936) although no detailed study of its feeding habits has been made. In this note evidence is presented that some of the more primitive Osmylidae take plant food as adults.

The subfamily Kempyninae contains some of the largest and most spectacular Osmylidae and, on some venational features (such as the basal position of the forewing MP fork—Adams, 1969) are considered to be a relatively primitive group. During recent revisionary work on the Australian representatives of Kempyninae, mid- and hind-gut contents of specimens dissected for genitalic examination were appraised. Following partial maceration in 10 per cent KOH, gut contents remaining in the abdomen were smeared in distilled water and examined microscopically. Twenty specimens, representing both described and undescribed species of *Kempynus* Navás and *Australysmus* Kimmins, yielded recognisable gut contents.

Fourteen specimens (six spp.) contained plant material of various sorts (Table 1) and only six (four spp.) yielded traces of animal (insect) prey. Only one specimen contained both categories of food. Both genera were represented in each category but, because some species are represented only by singletons, naming beyond this level is not helpful. For the few species of which several specimens were examined there appeared to be considerable individual variation in diet, and it is clear that individuals of the same species may eat different foods at different times. One individual of *Kempynus longipennis* (Walker) (five individuals examined) had the gut full of fungal hyphae, three others contained a mixture of foods which included hyphae, spores, pollen (Compositae, *Eucalyptus*) and bark flakes, and one had fed on insects. These categories, together with bark flakes, encompassed the foods of other taxa examined. Insect remains included adult moths, a small caterpillar, and psyllids. This broad food spectrum contrasts markedly with that of several

TABLE 1

Mid- and hind-gut contents of adult Kempyninae (total of 20 individuals: some entered in > 1 column; intermediate categories subjective; 'trace' = ca < 20%).

Total individuals	Food constituent	Number of individuals with proportion of gut contents*			
		Full	> 50%	> 20%	Trace
6	insects	2	—	1	3
7	pollen	—	3	3	1
7	fungal hyphae	1	3	1	2
5	spores	—	—	3	2
9	foliage fragments	—	—	5	4
6	bark fragments	—	4	—	2

* Percentages are visual estimates based on relative areas of slide-mounted gut smears for each individual.

myrmeleontoid families, in which equivalent gut preparations invariably showed only arthropod fragments (unpublished data), and implies that at least some Osmylidae are relatively polyphagous.

Osmylidae are generally presumed to fly relatively weakly. They have relatively broad wings and lack a wing-coupling mechanism and are probably not as 'efficient' as aerial predators as are some other groups of Neuroptera. Several species have been recorded in groups on vegetation near stream banks and similar habitats (Riek, 1970, for example). It is possible that this relatively inactive life style may favour general browsing rather than active searching for animal prey. Pollen-feeding is well-known in some Chrysopidae, but that association appears to be more intimate, as such species are not generally predatory as well. It seems that some Osmylidae may be amongst the most generalised feeders in the Neuroptera, and information on the effects of different foods on their reproductive biology would be of considerable interest.

References

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